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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/598,198

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Michiyo Hirayama

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EXAMINER

GUPTA, VANI

ART UNIT

PAPER NUMBER

3768

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/598,198	<b>Applicant(s)</b> HIRAYAMA ET AL.	
	<b>Examiner</b> VANI GUPTA	<b>Art Unit</b> 3768	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on 24 March 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Inventorship***

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. ***Claims 1 – 12 are rejected under 35 USC 103(a) as being obvious over Kunii et al. (US 4,181,120) in view of Drinkwater et al. (US 2004/0254470 A1).***

**Regarding Claim 1**, Kunii discloses an ultrasonic probe assembly comprising:

- a. Ultrasonic device that transmits and receives ultrasound (fig. 3a, 34);
- b. A frame that supports the ultrasonic device/transducer that supports, or holds the ultrasonic transducer (fig. 3a, 31);

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- c. A window, or *acoustic lens*, that is coupled with the frame so as to surround the ultrasonic device (fig. 3a, 24); and
- d. an ultrasound propagation medium, or acoustical coupling medium, with which a space surrounded by the frame and the window is filled (33).
- e. Wherein the window comprises a metal portion, wherein a part of the metal portion being embedded in an inside of the resin portion and another part being exposed to an outside of the resin portion, and that the coupling of the window and the frame is implemented by coupling the part of the metal portion exposed to the outside of the resin portion with the frame (fig.2a; col. 3, lines 27 – 38).

However, Kunii differs from Claim 1 in that he does not specifically disclose that metal portions couples the frame to the window portion.

Nonetheless, Drinkwater discloses (Figure 2) metal portion(s) **16** and **18** supports the frame (**12**). In turn, resin portion (**28**) acts as a “window” and is coupled to the frame (**16** and **18**). Therefore, the frame is connected to the window.

Accordingly, it would have been prima facie obvious to modify Kunii with the teachings of Drinkwater to include the arrangement between the frame (12) and metal portions (16 and 18), to provide better support to the probe assembly.

**Regarding Claim 2**, as indicated by the specification of the present application, the resin portion (5b) is allowed to get into the apertures of the metal portion, which means that coupling force between the metal portion and the resin portion can be increased (paragraph [0034]).

Drinkwater explains the coupling element together with the metal portion serve to define the

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transducer cavity (paragraph [0037]). Furthermore, Drinkwater shows that within the contact footprint (50) of the resin portion (28), lays the “array aperture.” Here, the contact foot print is large enough to “wholly contain the [ultrasound transducer] array aperture” (*Drinkwater, paragraph [0042]*). Therefore, at the time of the invention, one of ordinary skill in the art could safely conclude that the in the case of Drinkwater's arrangement, the resin portion is an integral part of the metal portion.

**Regarding Claims 3 and 5**, Drinkwater teaches a convexo-concave structure provided at the metal portion at the part embedded in the inside of the resin portion (**Figure 3**).

**Regarding Claim 4**, Drinkwater teaches surface-roughening treatment is applied to the metal portion at the part embedded in the inside of the resin portion (*friction material; fig. 3, 40*).

**Regarding Claim 6**, Drinkwater teaches that the window is manufactured by insert molding. That is, the metal portion is not likely to be displaced or disengaged from the window portion (*paragraph [0037]*).

**Regarding Claim 7**, Kunii provides a male-shaped part and a female-shaped part are provided at coupling faces of the frame and the part of the metal portion exposed to the outside of the resin portion, and the male-shaped part and the female-shaped part are engaged so as to couple the metal portion and the frame (fig. 2a and fig. 3a).

**Regarding Claim 8**, Kunii provides a hook is provided at the part of the metal portion exposed to the outside of the resin portion, and the metal portion and the frame are coupled by latching with the hook (*col. 5, lines 50 – 67*).

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**Regarding Claim 9**, Kunii discloses that the metal portion is disposed so as to surround at least a part of the ultrasonic device other than an ultrasound transmission/reception face of the ultrasonic device (fig. 2a).

**Regarding Claim 10**, Drinkwater teaches that the resin portion is made of polymethyl pentene, or the like (paragraph [0044]).

**Regarding Claim 11**, Kunii discloses that the metal portion is made of stainless steel, or the like (col. 5, lines 55 – 58).

**Regarding Claim 12**, Kunii discloses the frame is made of metal (col. 3, lines 31 – 33).

### ***Response to Arguments***

Applicant's arguments filed March 24, 2009 have been fully considered but they are not persuasive.

Applicant argues that Kunii et al. fails to teach the features of Claim 1 as argued on p. 5/7 Applicant Arguments/Remarks.

Examiner respectfully disagrees for the reasons provided in col. 3, lines 7 – 10. The window is formed of a resin portion (i.e., “rubber,” or elastic material) penetrable by ultrasound energy. See also col. 3, lines 30 – 35, wherein Kunii et al. states that the window is part of a protection cap, which also comprises part of the frame portion. See also rejection of Claim 1. With respect to the “thinner cross-section” of window portion, there is nothing in Kunii et al. that suggests that this excludes the possibility of a metal portion residing in that area. In fact, please refer to fig. 2a, wherein frame portion (23) resides in window portion (bottom curved area of figure) of protection cap. Language of present claim in fact states that “part of metal portion is

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embedded inside resin portion.” Fig. 2a of Kunii et al. depicts as much. Applicant’s assertions as presented in the first paragraph of p. 6/7 refers to intended use and is not considered during examination of claims.

Applicant argues that Drinkwater et al. fails to teach the features of Claim 1 as argued on p. 6/7 Applicant Arguments/Remarks. Examiner respectfully disagrees with Applicant’s arguments and refers Applicant to rejection of Claim 1, and figures 2 and 3. Transducer cavity, as suggested by Applicant, is formed from the coupling of metal portion exposed on the outside of resin portion (28) with frame (16 and 18).

Therefore, cited prior art meets the features of the present claims, which stand rejected as presented above.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to VANI GUPTA whose telephone number is (571)270-5042. The examiner can normally be reached on Monday - Friday (8:30 am - 5:30 pm; EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/V. G./

Examiner, Art Unit 3768

/Long V Le/

Supervisory Patent Examiner, Art Unit 3768